

UNITED STATES DEPARTMENT OF THE INTERIOR
 BUREAU OF SAFETY AND ENVIRONMENTAL ENFORCEMENT
 GULF OF MEXICO REGION

ACCIDENT INVESTIGATION REPORT

For Public Release

1. OCCURRED

DATE: **17-APR-2021** TIME: **1415** HOURS

2. OPERATOR: **Shell Offshore Inc.**

REPRESENTATIVE:
 TELEPHONE:
 CONTRACTOR:
 REPRESENTATIVE:
 TELEPHONE:

- STRUCTURAL DAMAGE
- CRANE
- OTHER LIFTING
- DAMAGED/DISABLED SAFETY SYS.
- INCIDENT >\$25K
- H2S/15MIN./20PPM
- REQUIRED MUSTER
- SHUTDOWN FROM GAS RELEASE
- OTHER

3. OPERATOR/CONTRACTOR REPRESENTATIVE/SUPERVISOR ON SITE AT TIME OF INCIDENT:

8. OPERATION:

4. LEASE: **G33733**

AREA: **MC** LATITUDE:
 BLOCK: **437** LONGITUDE:

- PRODUCTION
- DRILLING
- WORKOVER
- COMPLETION
- HELICOPTER
- MOTOR VESSEL
- PIPELINE SEGMENT NO.
- OTHER

5. PLATFORM: **A-Appomattox**
 RIG NAME:

6. ACTIVITY: EXPLORATION (POE)
 DEVELOPMENT/PRODUCTION (DOCD/POD)

9. CAUSE:

7. TYPE:

INJURIES:

HISTORIC INJURY

<input checked="" type="checkbox"/>	REQUIRED EVACUATION	1	OPERATOR	CONTRACTOR
<input type="checkbox"/>	LTA (1-3 days)			
<input checked="" type="checkbox"/>	LTA (>3 days)	1		
<input type="checkbox"/>	RW/JT (1-3 days)			
<input type="checkbox"/>	RW/JT (>3 days)			
<input type="checkbox"/>	FATALITY			
<input type="checkbox"/>	Other Injury			

- EQUIPMENT FAILURE
- HUMAN ERROR
- EXTERNAL DAMAGE
- SLIP/TRIP/FALL
- WEATHER RELATED
- LEAK
- UPSET H2O TREATING
- OVERBOARD DRILLING FLUID
- OTHER _____

- POLLUTION
- FIRE
- EXPLOSION

LWC HISTORIC BLOWOUT
 UNDERGROUND
 SURFACE
 DEVERTER
 SURFACE EQUIPMENT FAILURE OR PROCEDURES

- 10. WATER DEPTH: **7400** FT.
- 11. DISTANCE FROM SHORE: **92** MI.
- 12. WIND DIRECTION:
SPEED: M.P.H.
- 13. CURRENT DIRECTION:
SPEED: M.P.H.
- 14. SEA STATE: FT.
- 15. PICTURES TAKEN:
- 16. STATEMENT TAKEN:

COLLISION HISTORIC >\$25K <=\$25K

INCIDENT SUMMARY:

On 17 April 2021 at 1415 hours, a stack operator was contacted with asphaltene inhibitor on the arms and face while attempting to open chemical injection valves to Well AC-006 on Mississippi Canyon (MC) 437 A Appomattox, Lease OCS-G 33733. The Injured Person (IP) was seen by the offshore medic, provided first aid, and released back to full duty without restrictions. The next day, the IP experienced eye irritation and was evacuated by helicopter. The incident is classified as a Lost Time Accident Greater Than 3 Days (LTA > 3 days). Appomattox is a manned production facility operated by Shell Offshore, Inc (Shell).

SEQUENCE OF EVENTS:

On 17 April 2021 at 1415 hours, a stack operator went to the Topsides Umbilical Panel Assembly (TUPA) to line up the asphaltene inhibitor line to Well AC-006. Upon opening isolation valve M4220-77H1, asphaltene inhibitor sprayed out of the flow element's weep hole. The flow element FE 4220-H1 works with a flow transmitter to determine flowrate for chemical injection. The inhibitor contacted the IP's arms and face. A second worker closed an upstream valve to stop the release of the asphaltene inhibitor. The IP immediately stepped off the skid and was escorted to the nearest eyewash station 21 ft away. The IP rinsed his eyes at the station and then reported to the medic's office for evaluation. The medic administered first aid treatment and released the IP back to full duty.

On 18 April 2021, the IP requested to go onshore to his personal doctor after feeling eye irritation. He was evacuated by helicopter.

On 19 April 2021, the onshore physician diagnosed the IP with chemical conjunctivitis and prescribed medication. The physician ordered the IP not to return to work for 7 days. The IP was working a 14-day on/14-day off schedule, and as a result of the injury, he missed the last 5 days of his scheduled 14-day work shift. The IP returned to work on his following scheduled hitch.

On 20 April 2021, the incident was reported via the Bureau of Safety and Environmental Enforcement (BSEE) New Orleans District (NOD) after-hours phone.

On 29 April 2021, the incident was submitted into the BSEE eWell system.

BSEE INVESTIGATION:

The BSEE Accident Investigator (AI) requested additional information about the chemical Material Safety Data Sheet (MSDS), the IP's Personal Protective Equipment (PPE), the IP's work schedule, the IP's work experience, pollution from the chemical spray, and the purpose of the valve's weep hole.

BSEE found that Shell's PPE requirements for this work activity were inadequate. The IP was wearing normal PPE with no chemical resistant gloves or face shield. Shell claimed that no PPE was required because the employee was not breaking containment. However, BSEE disagreed with this assessment. Shell's corrective action involved building a stainless steel fixed mechanical barrier to prevent workers operating the valve above the Flow Element FE 4220-H1 from being impacted with chemical spray.

Next, BSEE found that the IP was working a 14-day on/14-day off hitch. The IP was released to full duty by Shell's onboard medic and E-doc. However, The IP departed the platform early from his normal hitch to seek further medical examination. This

information helped BSEE classify the incident an LTA > 3 Days.

Also, BSEE discovered that the IP had over 5 years experience as a Shell employee with several more years of contract experience. BSEE was able to conclude that this incident was likely not the result of inexperience.

BSEE found that no pollution occurred as a result of the chemical spray. The mist was contained to the employee and the skid pan below. Also, another employee working with the IP was able to isolate the line by closing another valve upstream.

The weep hole is used as an indicator on the flow element to signify a loose fitting on the 15,000 psi rated line. Therefore, it was determined that chemical sprayed from the weep hole due to a loose tubing fitting between the valve and the flow element. When the fitting was retightened, the weep hole stopped leaking.

CONCLUSIONS:

The leak was caused by a loose fitting between an isolation valve and the flow element. According to Shell, the valve upstream of this flow element had been used on other occasions since initial production. No work was performed on this panel since the last use. Therefore, BSEE concludes that the fitting may have come loose over time. Vibration or improper initial tightening of the fitting are possible causes for the loose fitting. However, BSEE notes that vibration is not significant in this area of the platform. A contributing cause of the accident was that Shell did not have adequate protection for personnel performing the task of aligning and opening valves associated with the subsea chemical injection. Shell did expect to break containment and therefore did not consider additional PPE for the job. However, Shell failed to recognize possibility of a leak from the weep hole. The possibility of a leak should have been recognized in the JSA and proper PPE should have been worn for the job.

18. LIST THE PROBABLE CAUSE(S) OF ACCIDENT:

Equipment Failure: Inadequate equipment inspection. A loose tubing fitting between the flow element and the isolation valve went undetected prior to opening the valve. The fitting may have been loose due to improper installation or vibration.

19. LIST THE CONTRIBUTING CAUSE(S) OF ACCIDENT:

Work Environment: Not aware of hazards/**Inadequate PPE:** Shell failed to recognize possibility of a leak from the weep hole. The possibility should have been recognized in the JSA and proper PPE should have been worn for the job.

20. LIST THE ADDITIONAL INFORMATION:

Shell installed stainless steel guards to prevent workers from chemical spray from the weep hole.

Shell plans to develop a hazardous chemical awareness program.

21. PROPERTY DAMAGED:

NATURE OF DAMAGE:

N/A

N/A

ESTIMATED AMOUNT (TOTAL):

22. RECOMMENDATIONS TO PREVENT RECURRENCE NARRATIVE:

The BSEE New Orleans District has no recommendations for the Office of Incident Investigations at this time.

23. POSSIBLE OCS VIOLATIONS RELATED TO ACCIDENT: **NO**

24. SPECIFY VIOLATIONS DIRECTLY OR INDIRECTLY CONTRIBUTING. NARRATIVE:

25. DATE OF ONSITE INVESTIGATION:

28. ACCIDENT CLASSIFICATION:

03-JUN-2021

29. ACCIDENT INVESTIGATION
PANEL FORMED: **NO**

26. INVESTIGATION TEAM MEMBERS:

OCS REPORT:

Gerald Taylor - AI Specialist /

30. DISTRICT SUPERVISOR:

27. OPERATOR REPORT ON FILE:

David Trocquet

APPROVED

DATE: **23-JUL-2021**